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10/079,906	02/22/2002	Hitoshi Narusawa	1660.1001	7374

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EXAMINER

MICHALSKI, JUSTIN I

ART UNIT

PAPER NUMBER

2644

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/079,906

Applicant(s)

NARUSAWA, HITOSHI

Examiner

Justin Michalski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 6 and 8 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4 and 6.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kandel et al. (US Patent 6,353,671).

Regarding Claim 1, Kandel et al. discloses an acoustic signal processor (Figure 4) comprising: an input unit into which acoustic signals are input (112); detecting a frequency band having a highest energy level frequency bands comprising the acoustic signals input into the input unit (Kandel discloses amplifier 114 amplifies second formant but does not pass first formants (i.e. passes second formants by identifying highest energy level, i.e. first formants) (Column 9, lines 5-9); and a circuits (114, 115, 116, and 122) for maintaining the energy level of the acoustic signals input into the input unit substantially at a constant level for frequency bands lower than the frequency band by the detector (Figure 2 discloses low frequencies maintained at a constant level), and increasing the amplification degree of the energy level of the acoustic signals input into the input unit as the frequency increases for the frequency bands higher than the frequency band detected by the detector (Figure 2 discloses upper frequencies with increased amplification). Kandel et al. does not explicitly disclose a detector or a

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variable equalizer. However, Kandel et al. discloses that amplifier 114 amplifies second formant but does not pass first formants. One skilled in the art would recognize that some detection must take place in order to determine the first formant and higher formants to pass. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include a detector to determine the first formant (i.e. highest energy level). Kandel further discloses amplifiers 114 and 122 are used to amplify frequencies producing a gain output as shown in figure 2 showing variable gain throughout the frequency range (i.e. variable equalizer). It is well known in the art that variable equalizers are used to produce variable gain over a frequency range. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a variable equalizer to produce a variable gain as disclosed in Figure 2.

Regarding Claim 6, Kandel et al. further discloses the amplification degree of the variable equalizer is in the 15 to 25 dB range as disclosed in Figure 2.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kandel et al. as applied to claim 1 above in view of Melanson et al. (US Patent 6,104,822).

Kandel et al. discloses a processor as stated apropos of claim 1 above. Kandel does not disclose an A/D converter at an output side of the variable equalizer. Melanson et al. discloses a hearing aid (Figure 1a) for amplifying acoustic signals comprising an A/D (52) converter at an output side of a signal processing means (i.e. variable equalizer) (50). Melanson teaches a digital signal processing means comprising: a filter bank

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analyzer for dividing input digital signals into a plurality of individual frequency band signals and a means for processing one of said individual frequency band signals and gain coefficients to generate one of a plurality of processed frequency band signals (Column 19, lines 60-62 and Column 20, lines 26-29). Therefore, it would have been obvious to one of ordinary skill in the art to use a DSP to perform the same function as the analog circuit as described by Kandel et al. to provide a more easily manufacturable and robust hearing aid.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kandel et al. (US Patent 6,353,671) and further in view of Melanson et al (US Patent 6,104,822). Kandel et al. discloses an acoustic signal processor (Figure 4), comprising: circuitry to perform frequency analysis on acoustic signals and amplify frequency bands higher than a frequency band at which an energy level is highest (Kandel et al. discloses separating signal components including first formant (i.e. highest energy level) (Column 8, line 66 through Column 9, line 15) and Figure 2 which discloses increases for the frequency bands above the first formant at 1.0KHz (Column 7, line 20). Kandel does not disclose an A/D converter and a digital processor. Melanson discloses a hearing aid for amplifying acoustic signals comprising: an A/D converter (44) for digitizing input acoustic signals and a microprocessor or digital processor (50) to provide optimal results in a particular listening environment. Melanson et al. teaches a digital signal processing means comprising: a filter bank analyzer for dividing input digital signals into a plurality of individual frequency band signals and a means for processing one of said

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individual frequency band signals and gain coefficients to generate one of a plurality of processed frequency band signals (Column 19, lines 60-62 and Column 20, lines 26-29). Therefore, it would have been obvious to one of ordinary skill in the art to use a DSP to perform the same function as the analog circuit as described by Kandel et al. to provide a more easily manufacturable and robust hearing aid.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 1 and 8 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4 and 2 respectively of copending Application No. 10/613,995. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

Regarding Claim 1, an input unit into which acoustic signals are input is inherent in claim 4 of application 10/613,995. Amplifier as claimed in claim 4 of application 10/613,995 can be interpreted as a variable equalizer.

Regarding Claim 8, it is obvious that claim 2 of application 10/613,995 would contain a D/A converter to produce an analog audio output to be output to a user.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claim 8 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 of U.S. Patent No. 6,674,868 in view of Melanson et al. (US Patent 6,104,822). Claims 1-4 of Patent No. 6,674,868 claim a controller (i.e. processor) to determine or detect a frequency band at the highest level of the acoustic signals through frequency analysis. Claims 1-4 further claim increasing gain for signals of the higher frequency range than the frequency band at the highest level (i.e. frequency bands higher than a frequency band at which an energy level is highest). The claims do not disclose an A/D converter for digitizing input acoustic signals. Patent 6,674,868 discloses an embodiment (Figure 6) with an A/D converter (12) for digitizing input acoustic signals to processor (13). Melanson et al. (US Patent 6,104,822) teaches a digital signal processing means comprising: a filter bank analyzer for dividing input digital signals into a plurality of individual frequency band signals and a means for processing one of said individual frequency band signals and gain coefficients to generate one of a plurality of processed frequency band signals (Column 19, lines 60-62 and Column 20, lines 26-29). Therefore, it would have been obvious to one of ordinary skill in the art to use a DSP to perform the same function as

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the processor described by Narusawa (Patent 6,674,868) to provide a more easily manufacturable and robust signal processor.

Allowable Subject Matter

8. Claims 2, 3, 5, and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (703)305-5598. The examiner can normally be reached on 8 Hours, 5 day/week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JIM
May 5, 2004


XU MEI
PRIMARY EXAMINER